

# Cell Membrane & Transport Webquest

## Site 1: Cell Membrane <http://www.susanahalpine.com/anim/Life/memb.htm>

Play the animation to see an overview of the cell membrane. Step through the animation a SECOND time. As you do, complete question 1.

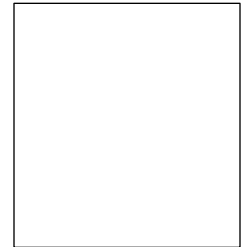
1. Draw the cell membrane and label the following structures:  
(+, -, phospholipids, hydrophilic heads, hydrophobic tails, peripheral proteins, integral proteins, cholesterol)



## Site 2: Phospholipids <http://learn.genetics.utah.edu/content/cells/membranes/>

At this point you have discovered that one of the major components of the cell membrane are phospholipids. Read "Membranes Form Spontaneously" and answer the questions below.

2. Draw a phospholipid. Label the **hydrophilic head** and **hydrophobic lipid tail**.
3. What happens to phospholipid when they are placed in water?
4. What is the name of the structure? \_\_\_\_\_



### Passive Transport:

5. Review your notes on passive transport. Passive transport is the movement of molecules from an area of \_\_\_\_\_ concentration to an area of \_\_\_\_\_ concentration which \_\_\_\_\_ (does or does not) require energy.

## Site 3: Diffusion

[http://highered.mheducation.com/sites/0072495855/student\\_view0/chapter2/animation\\_how\\_diffusion\\_works.html](http://highered.mheducation.com/sites/0072495855/student_view0/chapter2/animation_how_diffusion_works.html)

If you have them, plug in your headphones. Otherwise, simply read the text and watch the animation.

1. In terms of molecules, explain what happens to a sugar cube when it is placed into a beaker of water.

2. Define diffusion. \_\_\_\_\_

3. Using the arrow seen below, illustrate the diffusion of molecules from high concentration to low concentration.



4. What can affect the rate of diffusion?

5. Predict: what would happen if you drop the sugar cube into a beaker of hot water vs. a beaker of cold water.

## Site 4: Facilitated Diffusion

[http://highered.mheducation.com/sites/0072495855/student\\_view0/chapter2/animation\\_how\\_facilitated\\_diffusion\\_works.html](http://highered.mheducation.com/sites/0072495855/student_view0/chapter2/animation_how_facilitated_diffusion_works.html)

6. The process of facilitated diffusion uses a special \_\_\_\_\_ with a central channel to help \_\_\_\_\_ move across the membrane.
7. Explain why these protein channels are selective in what they allow into or out of the cell. \_\_\_\_\_
8. Facilitated diffusion involves the movement of particles \_\_\_\_\_ (with or against) the concentration gradient.

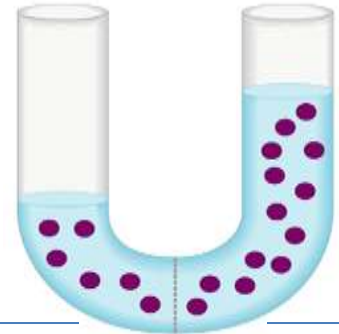
9. In what ways are simple and facilitated diffusion the same? \_\_\_\_\_
10. How are they different? \_\_\_\_\_

#### Site 5: How Osmosis Works

[http://highered.mheducation.com/sites/0072495855/student\\_view0/chapter2/animation\\_how\\_osmosis\\_works.html](http://highered.mheducation.com/sites/0072495855/student_view0/chapter2/animation_how_osmosis_works.html)

Watch the animation and answer the questions.

11. What is osmosis? \_\_\_\_\_
12. A solution is considered **ISOTONIC** when \_\_\_\_\_.
13. When solutions have unequal osmotic concentration, the solution with the higher concentration of solutes (*particles*) is hypertonic and the solution with the lower concentration of solutes is hypotonic. Look at the picture on the right and label **hypertonic** and **hypotonic**.



#### Site 6: Active Transport Overview

<https://www.wisc-online.com/learn/natural-science/life-science/ap11203/transport-processes-requiring-atp>

14. In active transport, the carrier transports the molecule from an area of \_\_\_\_\_ to and area of \_\_\_\_\_.
15. What does ATP stand for? \_\_\_\_\_ How much of a cell's ATP is used for active transport across the cell membrane? \_\_\_\_\_
16. Draw the diagram of active transport and label: *lower concentration, higher concentration, protein carrier, binding site, ATP, phospholipid bilayer*. Also **draw an arrow** to indicate the movement taking place.
17. In the diagrams for endocytosis, is the bottom diagram showing pinocytosis or phagocytosis? \_\_\_\_\_
18. In exocytosis, where do the vesicles for export come from? \_\_\_\_\_



#### Site 7: Sodium-Potassium Pump

[http://highered.mheducation.com/sites/0072495855/student\\_view0/chapter2/animation\\_how\\_the\\_sodium\\_potassium\\_pump\\_works.html](http://highered.mheducation.com/sites/0072495855/student_view0/chapter2/animation_how_the_sodium_potassium_pump_works.html)

19. What does the pump move out of the cell? \_\_\_\_\_ How much of this is moved out? \_\_\_\_\_
20. What does the pump move into the cell? \_\_\_\_\_ How much of this is move in? \_\_\_\_\_
21. When ATP binds, describe what happens to the pump. \_\_\_\_\_
22. Both sodium and potassium are moving from areas of \_\_\_\_\_.

#### Site 8: Endocytosis and Exocytosis <http://highered.mcgraw-hill.com/olc/dl/120068/bio02.swf>

Play the animation to see an overview of endocytosis and exocytosis.

23. List the three types of endocytosis and write what each type transports.
- a. \_\_\_\_\_:
- b. \_\_\_\_\_:
- c. \_\_\_\_\_:
24. What is the difference between endocytosis and exocytosis? \_\_\_\_\_